



LAB EXERCISES

Distributed Algorithms (IN4150)

Distributed Systems Group (DS)
Department Software Technology
Faculty EEMCS

Assignment 1A

TOTAL ORDERING OF BROADCAST MESSAGES

Ed. 2022-2023

Assignment

Implement Algorithm 3.18 of the lecture notes for the total ordering of broadcast messages. Please ensure that the solution adheres to the following requirements:

1. The algorithm is implemented using either the Java or the Python template (available on Brightspace).
2. The implementation runs across multiple Docker containers.
3. The network structure and the node behaviour are adjustable (e.g. network size and messages sent).
4. Each node incorporates random delays before sending a message in order to emulate network conditions (e.g. through traffic control).
5. Each node logs events separately (e.g. separate log files or terminals). Ensure that these logs are **human-readable**.
6. The solution contains a **minor** report (e.g. a README file) highlighting executed test cases. This report documents the steps taken to validate the workings of the algorithm.

The assignment can be split up into two parts.

Part A

Gain familiarity with the selected template and implement the algorithm.

Part B

Design a few test cases for the algorithm and document these in your report. Ensure that the total message ordering can be derived from the output of your processes.